ABSTRACT:

This paper describes and introduces a new approach to monitor dengue hemorrhagic fever using BIA technique. This technique is an in vivo technique where an approximately a small average constant current of 460 µA at single frequency, 50 kHz is applied through human body, and measure the body's resistance and reactance to that current via four-surface electrode. These measurements are combined with the patient data (i.e. age, sex, height and weight) to estimate mass and water compartments. The dengue's clinical studies in correlation with the BIA measurement have been conducted on 119 male and 91 female who are the DHF patients in Universiti Kebangsaan Malaysia, Hospital (HUKM) in Malaysia. The data obtained show that it is possible to predict a patient's condition; recovering or leading to hemorrhagic by monitoring the increasing trend of phase angle and reactance and the decreasing trend for the of ratio of extracellular to intracellular water (ECW/ICW) and ratio of extracellular body mass to body cell mass (ECM/BCM). Experimental findings show that bioelectrical tissue conductivity (BETC), as reflected by reactance is the key determinant indicator for monitoring the hemoglobin status in the DHF patients. Hence, this novel approach of BIA technique can provide rapid, non-invasive, and promising method for monitoring and evaluating the status of the DHF patients.